Summary of Colonial Nesting Herons Within the Colonial National Historic Park Boundaries, 2005

The Center for Conservation Biology
The College of William and Mary

September 2005

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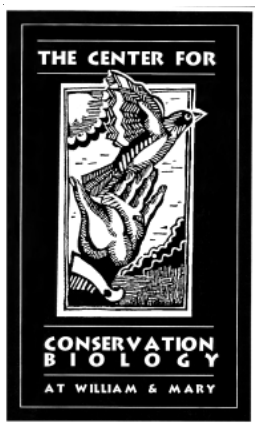
Cover photo of Great Blue Heron by Josh Nemeth



This paper is funded by grants from the Colonial National Historic Park. The views expressed herein are those of the authors and do not necessarily reflect the views of the Colonial National Historic Park.

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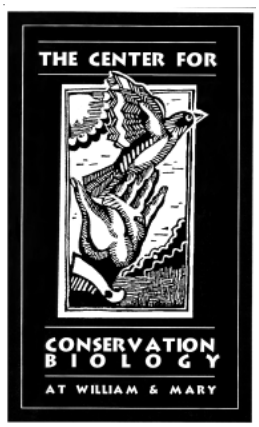
Recommended Citation:

Smith, F.M. Summary of Colonial Nesting Herons Within the Colonial National Historic Park Boundaries, 2005. Center for Conservation Biology Technical Report Series, CCBTR-05-11. College of William and Mary, Williamsburg, VA. 13 pp.

Project Funded By:

The Colonial National Historic Park and
The Center for Conservation Biology at William and Mary



The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

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HERON COLONY NEST COUNTS OVERVIEW

Year	Yorktown	Jamestown	Swanns Point	Ringfield	College Creek
1993	375/70*	160	90	0	0
1997	355/117*	220	92	0	0
2003	196/25*	225	135	14	22
2005	126/9*	110	55	21	9

Table 1. Overview of colony counts in recent years.

**Second number reflects the number of Great Egrets.*

SURVEY METHODS

Ground surveys were used to count the number of nests in each colony. Surveys were conducted in early to mid-May. Trees were marked with flagging to avoid double counting of nest trees. The colony boundaries were mapped using aerial imagery.

Data fields recorded at each site include numbers of occupied trees, numbers of nests per tree (See Appendix II), status of each nest tree (e.g. living, dead), species of nest tree, and activity status of each nest if it could be determined (See Appendix III). General habitat characteristics were recorded at each colony site.

Activity status for each nest was described according to the following categories:

1. Adult incubating.
2. Presence of adult in a shading or a brooding posture, or the presence of small young seen from below. Presence of fresh egg shells under the nest was also used to determine nest status.
3. Presence of large young.
4. Presence of dead young, either in the nest or on the ground underneath the nest.
5. Partial nest. Either under construction or abandoned.
6. Unknown status. Nest present but no sign of eggs, young, or adults visible from ground.

HABITAT DESCRIPTIONS AND COLONY SUMMARIES

Jamestown Colony: The Jamestown Island heronry contains some of the largest loblolly pines of any of the sites. This site contains many trees in the 35-45 inch diameter range. The colonies are spread between 4 different ridges on the southern end of Jamestown Island. The majority of the herons nest along the largest and most central of the ridges (referred to as Ridge 1 in Figure 1). In contrast to the 2003 heron surveys, Ridge 1 has

much more greenbrier and a thick wax myrtle shrub layer. Many of the large canopy trees on the ridge died during Hurricane Isabel in the fall of that year. The ridge due west from Ridge 1 has in the past contained heron nests (which we will refer to as Ridge 2). The Ridge 2 habitat is much denser than Ridge 1, with far more greenbrier and wax myrtle than Ridge 1. Ridges 3, 4, and 5 are smaller than Ridges 1 and 2 in both length and width and have a very dense understory layer. The Jamestown colony continues to shift across the pine ridges on the southern side of the island. In 2005, the birds occupied 3 of 4 ridges occupied in 2003, and they also occupied a ridge just west of the southernmost ridge on the island (See Figure 1 for a colony boundaries map).

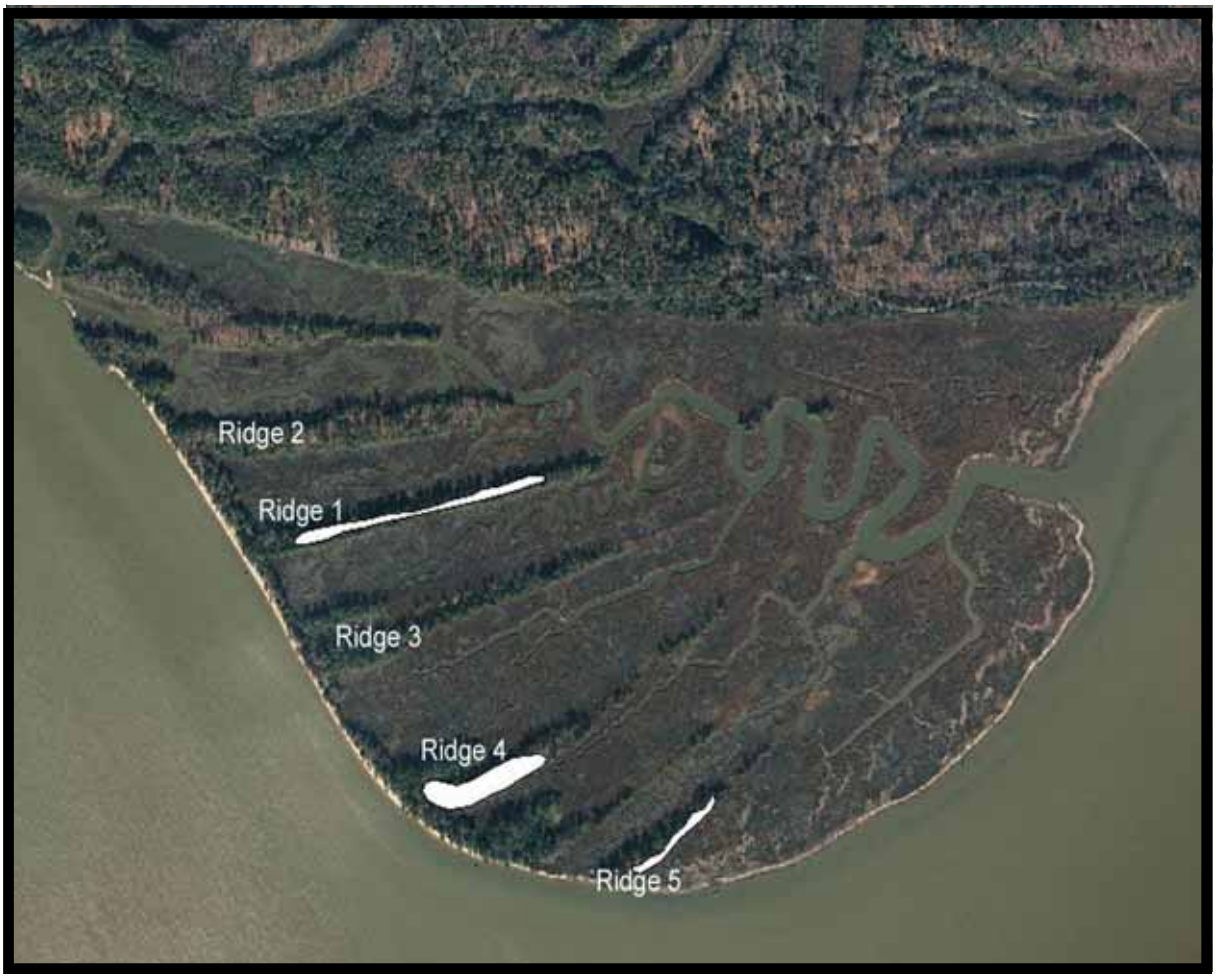

Figure 1. All locations of Great Blue Heron colonies on Jamestown Island. Colony boundaries are in white. Ridges 2 and 3 formerly had breeding herons but in 2005 had no nesting herons.

Yorktown Colony: The Yorktown heronry continues to decline over time. All nests within the colony are in mature living pines. The colony is also bordered on three sides by mature living pines, suggesting that lack of nesting substrate is not the cause of the decline. The colony is bordered to the west by Beaverdam Creek (See Figure 2 for the colony boundaries map). The Yorktown site has an open understory.

Colony density in 2005 was down and the majority of nesting trees had fewer than 3 nests. A total of 23 young heron carcasses were found below nests, but it is difficult to speculate on the causes of these mortalities. Numerous Fish Crows were observed flying over the canopy. Numerous depredated eggs were found underneath the colony suggesting that fish crows remain an important factor in productivity.

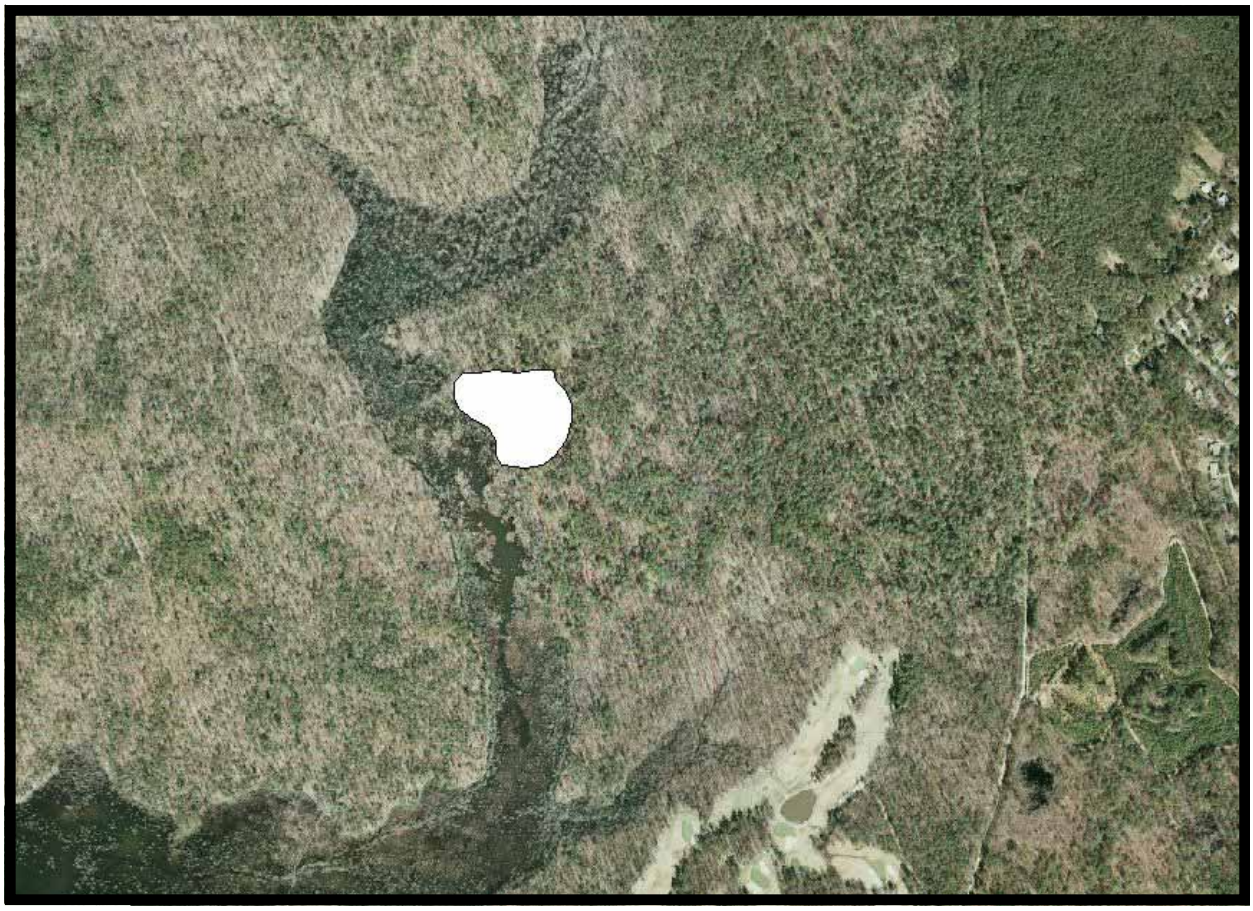

Figure 2. Boundary of Yorktown henronry. Colony boundaries are in white.

Swanns Point Colony: The Swanns point colony has declined substantially since the 2003 survey. The main colony is still largely centered in the mature pines of Black Duck Gut, but has shifted to the east and encompasses some of the mature bald cypress trees as well. The understory is open and very park like in the pine section of the colony, and quite swampy with an open understory in the section composed of cypress trees. A few nests were found to the northeast of the main colony (See Figure 3 for a map of colony boundaries).

Figure 3. Location of colonies on Swanns Point. Colony boundaries are in white.

College Creek Colony: The College Creek heronry has declined in total nests since the 2003 survey. The colony was first discovered during the 2000 survey. The colony remains spread across the tips of two shoreline points separated by a small tidal gut (See Figure 4 for a map of colony boundaries). The site is very near the Colonial National Historic Parkway.

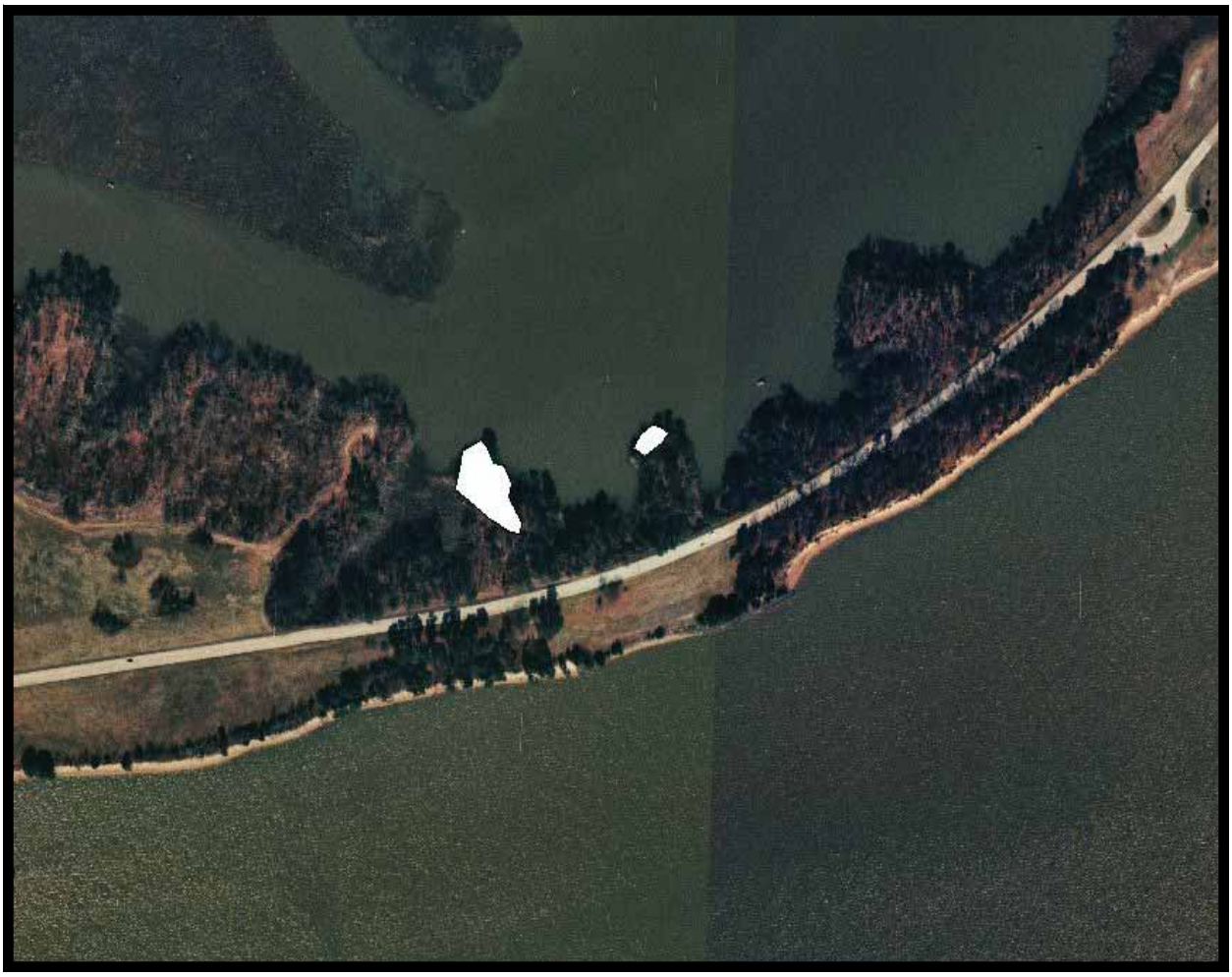

Figure 4. Location of College Creek heronry. Colony boundaries are in white.

Ringfield Colony: This colony was first discovered in 2003. The colony had a minor increase in the number of nesting pairs between 2003 and 2005. The colony is spread over the tips of two shoreline points separated by a small tidal gut (See Figure 5 for a map of colony boundaries). The colony trees are all healthy.

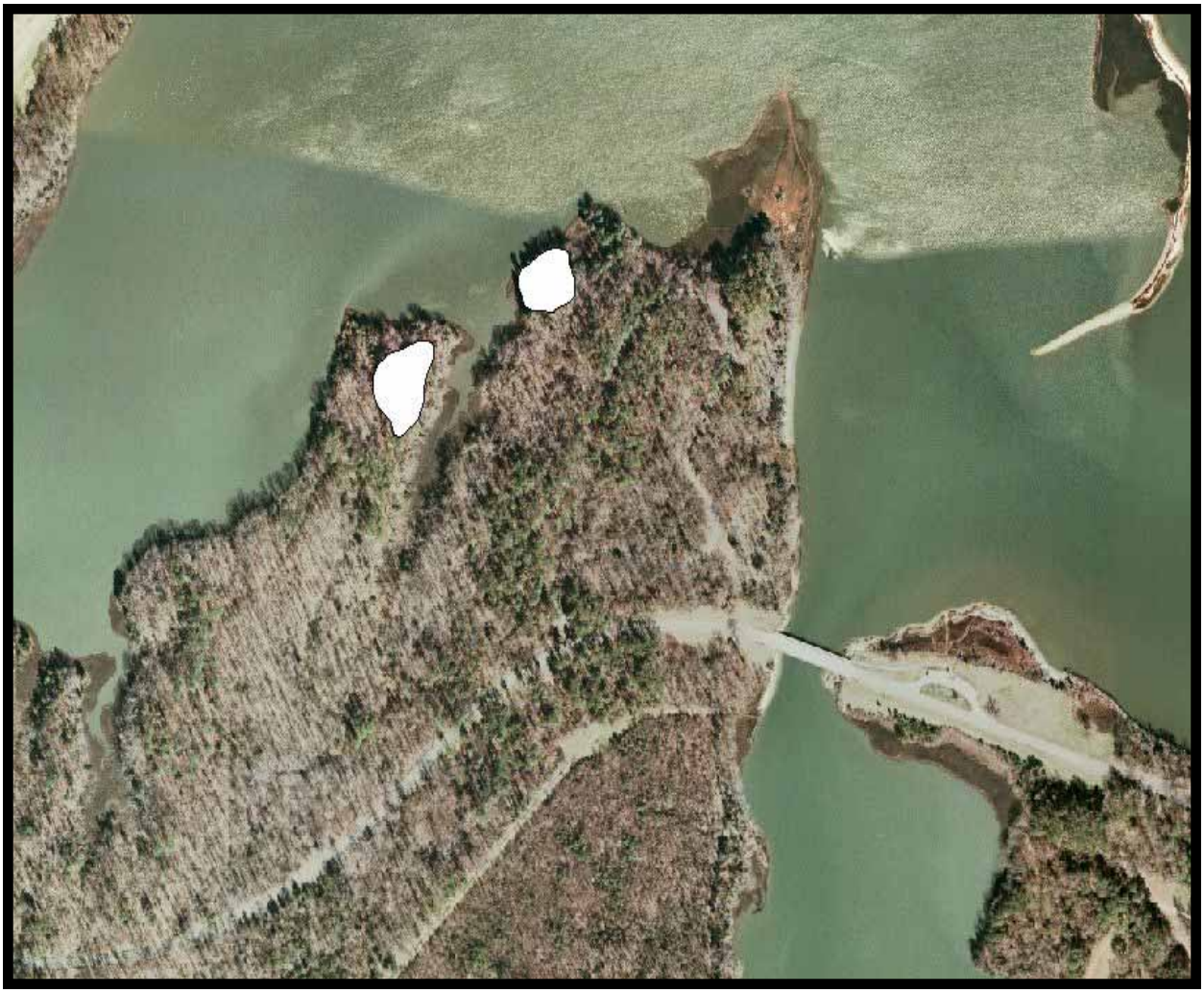

Figure 5. Location of Ringfield colony.

ACKNOWLEDGMENTS

We would like to thank the employees of the Colonial National Historic Park for their continued support. This project would not have been possible without the efforts of many people. Lydia Whitaker, Carlton Adams, Renee Peace, Anne Womack, Gloria Sciole, Mark Roberts, and Cheryl Pope provided important administrative support from the College of William and Mary. This study was funded through a grant from the Colonial National Historic Park and the Center for Conservation Biology at the College of William and Mary.

Appendix I. Overview of the current years survey results and of historic data. Data presented for Colonial National Historic Park properties along the lower James and York Rivers. Numbers represent nest counts, and by inference nesting pairs.

Year	Jamestown	Swanns Point	Yorktown	College Creek	Ringfield
1982	-	-	355	-	-
1983	-	-	368/5*	-	-
1984	19	-	335/8*	-	-
1985	21	-	350/6*	-	-
1986	25	-	390/11*	-	-
1987	14	16	415/6*	-	-
1988	13	13	470/15*	-	-
1993	160	90	375/70*	-	-
1997	220	92	355/117*	-	-
2003	225	135	196/25*	22	14
2005	110	55	126/10*	9	21

**All numbers represent the number of Great Blue Herons followed by the number of Great Egrets.*

Appendix II. The following is a table depicting the number of nests per tree within each site. Under each column is the number of nest trees containing that number of nests.

Site	1	2	3	4	5	6	7	8	9	10
Jamestown	60	34	12	4	-	-	-	-	-	-
Swanns Point	14	5	2	2	2	-	1	-	-	-
Yorktown										
Great Blue Heron	7	7	18	4	1	-	-	-	-	-
Great Egret	5	2	-	-	-	-	-	-	-	-
College Creek	5	2	-	-	-	-	-	-	-	-
Ringfield	15	3	-	-	-	-	-	-	-	-

Appendix III. The following table provides an overview of the activity status recorded at each nest. The numbers in each column are the percentages of each activity status recorded at each site.

Site	Adult Incubating	Adult Brooding	Large Young	Dead Young	Partial Nest	Unknown Status
Jamestown	37.3%	19.6%	31.4%	-	-	11.7%
Swanns Point	28.1%	-	53.4%	3%	3%	12.5%
Yorktown	-	-	50.6%	21.8%	-	27.6%
Ringfield	60%	-	30%	-	-	10%
College Creek	11.15%	-	11.15%	-	33.3%	44.4%